

# Exercise Solutions for Math 20

Factoring Polynomials and Simplifying Rational Expressions

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Contents

1		<b>3</b>
1.1	. . . . .	3
1.2	. . . . .	3
1.3	. . . . .	3
1.4	. . . . .	3
1.5	. . . . .	3

# 1

Factor the following completely.

## 1.1

$$16x^4 - 1$$

$\Rightarrow (4x^2 - 1)(4x^2 + 1)$	Factor using difference of two squares.
$\Rightarrow (2x - 1)(2x + 1)(4x^2 + 1)$	Factor using difference of two squares. ■

## 1.2

$$8j^3 - 125k^6$$

$\Rightarrow (2j - 5k^2)(4j^2 + 10jk^2 + 25k^4)$	Factor using difference of two cubes. ■
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## 1.3

$$s^2 + 7s + 10$$

$\Rightarrow (s + 2)(s + 5)$	Factor by grouping. ■
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## 1.4

$$4n^2 - 12n + 9$$

$\Rightarrow 4n^2 - 6n - 6n + 9$	Factor by grouping. ■
$\Rightarrow 2n(2n - 3) - 3(2n - 3)$	
$\Rightarrow (2n - 3)^2$	

## 1.5

$$x^3 - x^2 - x + 1$$

$\Rightarrow x^2(x - 1) - 1(x - 1)$	Factor by grouping.
$\Rightarrow (x^2 - 1)(x - 1)$	
$\Rightarrow (x - 1)(x + 1)(x - 1)$	Factor using difference of two squares. ■
$\Rightarrow (x - 1)^2(x + 1)$	